

greater energy during the night of the 6th and concentrated just north of the Ohio River.

At Louisville the barograph registered the least pressure, 28.90 inches (actual), about 3:40 a. m. of the 7th. This was followed by a sudden increase, amounting to .15 inch within thirty minutes. The temperature at Louisville at 3 a. m. of the 7th was 67°, very high for the hour and season.

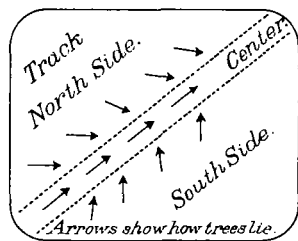
Thunderstorms, high winds, and heavy rains were general throughout the Ohio Valley during the same night.

At Cecilian, in Hardin County, two churches and several smaller buildings were destroyed and many houses unroofed or severely damaged. One of the churches, a very substantial brick building, was leveled to the ground, with the exception of a portion of the front wall, which was left standing. The rectory, standing within a few feet of the church, was uninjured. The other church was a lighter building. This was entirely demolished, even the foundation stones being moved out of place.

This occurred about 4:30 in the morning of the 7th. The destructive part of the storm lasted less than five minutes. The sky was inky black, except when lighted by vivid flashes of lightning.

Rev. J. J. Abell, of Bethlehem Academy, St. John, Hardin County, reports:

The violent storm of February 7 passed through the southeast side of Cecilian, which is 4 miles southeast of here. The exact time at Cecilian was at 4:25 a. m., central time. The rain was very heavy for about fifteen minutes. The direction of the storm's movement through Cecilian was north 51° east; the path of greatest destruction was about 3 miles long and 240 yards wide. Lightning was almost continuous. The direction in which trees fell is shown by the accompanying diagram.



In Ohio County, about 3:45 the same morning, a similar storm struck the little village of Narrows, practically wiping it out. The town consisted of about thirty residences and six business houses, and of these not one escaped severe injury and many were entirely destroyed. The path of this tornado seems to have extended from Dundee to Narrows, a distance of about 3 miles.

In many other localities in the central and northern portions of the State destructive storms occurred about the same time. Great damage was done to buildings and much property destroyed, but strange to say no lives were lost.

TORNADO AT MERIDIAN, ILL.

The following is summarized from a report, accompanied by a clipping from the Cairo Citizen, by Mr. Lewis Redding, of a tornado that struck the residence of the latter at Meridian, Ill., on February 7. The family were awakened by a clap of thunder, "the loudest I ever heard" at about 2 a. m., and the tornado struck the house a minute later with a roar like a train of cars. The building, which was two stories and a half high and very substantially built, was lifted from its brick foundations, turned around, and dropped. All the other buildings on the place, with the exception of the barn, were wrecked, and portions of them were carried more than a mile away. An oak tree 20 inches in diameter was twisted into splinters. The storm moved from southwest to northeast, over a path ten rods in width. The shape and motion of the clouds could not be observed, but the manner in which the debris was scattered indicates that the wind had the whirling motion characteristic

of tornadoes. There was no loss of life, and the property loss, exclusive of damage to the house, was about \$3000.

Meridian is about two miles east of Villa Ridge and 9 miles north of Cairo. The Weather Bureau office at Cairo reports a storm accompanied by extremely vivid lightning and moderate thunder. The wind reached a maximum velocity of 66 miles per hour at 2:41 a. m., and considerable damage was done.

RAIN AT FREEZING TEMPERATURES.

By E. D. EMIGR, Assistant Observer, Dodge City, Kans.

As my reports of rain and freezing temperatures at 8 p. m., January 1, and 8 a. m., February 17, have been questioned because of their apparent inconsistency, I would report in detail the following extract from the station record:

January 1, 1904.—Light misty rain, amounting to .02 of an inch, fell from 9:15 a. m., to 8:45 p. m., seventy-fifth meridian time, the maximum temperature during the entire duration of the storm being 23°, while a minimum of 20° was recorded. Though light snow accompanied the rain at intervals during the afternoon, the mist reached the ground in liquid form, and froze in solid sheets of ice on the sidewalks, sides of buildings, the ground, and whatever else it struck, indicating conclusively the existence of a stratum of warm air at no great elevation.

February 17, 1904.—In all essential particulars, this storm was identical with that of January 1. The existing temperature and its range, the character and amount of precipitation, and the prevalence of northerly wind and rising pressure were almost exactly the same. In this storm, however, no snow accompanied the rain, and it may also be of interest to note that several hours of its duration were at night.

The determination of the direction of cloud movement in these disturbances is a matter of considerable difficulty, but clearing weather about six hours after the ending of precipitation on the 17th of February disclosed a moderate velocity from the southwest at the stratus cloud level. It seems that the air currents even at comparatively low elevations have directions differing very materially from those at the earth's surface.

FORMATION OF CLOUDS OVER LAKE MICHIGAN IN WINTER.

By REV. CHARLES H. LEE, Racine, Wis., February 14, 1904.

The influence of lakes on local climate has been frequently referred to in the MONTHLY WEATHER REVIEW.¹ The following remarks contained in a letter to Prof. Frank H. Bigelow from Rev. Charles H. Lee, of Racine, Wis., under date of February 14, 1904, throw additional light upon the subject, since this careful observer has watched the formation of clouds over the lake as observers can not do at stations farther east, because so much of the time they are enveloped in the clouds:

Has the station at Milwaukee this winter noted the frequency of cloud movements from the northeast during periods of high? Apparently these movements occur with the onset of a southwestern low, and they are almost always followed by a northeaster, and consequent rise in surface temperature. Sometimes these clouds come up against a clear sky; sometimes against a sky marked by a thin line of cirrus, which seem to move more from the west than from the northwest, surface currents being always at these times from the northwest. I have several times predicted warmer weather and northeast winds, and I don't think I have missed it once. The clouds from the northeast are clearly aqueous vapor from over the lake, and can be seen gathering on the eastern horizon and slowly moving landward. It usually happens about noon, after a clear, cold morning, with the temperature about 0° F. When the temperature is below 0°, the whole surface of the lake steams like a boiling kettle, but when the sun is well up and the temperature has risen to +5° or +10° the steaming ceases and the eastern sky is massed full of this accumulated vapor, which seems to break off and slowly float shoreward, sometimes almost like a small summer cumulus. It makes an excellent illustration of your remark that "masses of air at different temperatures are reluctant to lose their individuality." It is usually about twelve to eighteen hours before the northeast surface current is established. Once or twice it lasted only a short time, the wind backing again to the northwest.

Just now things are peculiar, the lake being frozen wholly over for several miles, to the utter confusion of gulls and fish ducks, which are reduced to semistarvation and come ashore in flocks to attack garbage piles and sewer openings, and pathetically hunt possible air-holes. Yes—

¹See Monthly Weather Review, 1891, Vol. XXIX, pp. 422 and 563; 1892, Vol. XXX, p. 135.